IN THE CLAIMS

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132. (Currently amended) A process for treating wood having wood cellulose having a plurality of hydroxyl groups comprising the steps of:

providing a solution comprised of:

~~a non-water-based hydrophilic organic solvent;~~

a solute compound having a plurality of functional groups wherein each of which functional group includes;

an atom selected from the group consisting of tetravalent atoms, wherein said atom is bonded to a halogen atom or a functional group selected from the group consisting of a hydroxyl group, alkoxy group, phenoxy group, benzyloxy group, an aryloxy group having a polycyclic aromatic ring, and combinations thereof; and at least one acid catalyst;

applying said solution to the wood cellulose along with an organic solvent thereby allowing a solute compound to be drawn from the solution to the wood by an acid generating reaction within the wood, and

reacting said functional groups to form covalent bonds with other functional groups of said solute and to said wood cellulose and wherein the acid catalyst is produced by a ~~pro-catalyst defined as a~~ molecule producing an acid ~~in the presence of wood cellulose or water in wood cellulose~~ after the application to water in the wood cellulose.

133. (Currently amended) The process according to claim 132 further comprising the step of ~~maintaining said solute compound functional groups as monomers prior to applying said solution to wood having wood cellulose~~ reacting said solute compound functional groups only upon contact with the wood cellulose or water in wood cellulose.

134. (Currently amended) The process according to claim 133 further comprising the steps of simultaneous reaction and diffusion of the functional groups in the wood and a ~~self-initiating exothermic~~ heat generating reaction of said functional groups upon application to the wood to form covalent bonds with other functional groups of said

solute and to said wood cellulose.

135. (Currently amended) The process of claim 134 wherein the acid catalyst comprises a substance which ~~effects the exothermic reaction of the functional group~~ reacts with water in the wood to generate acid in a heat generating reaction so that the functional groups bond from the ~~[trivalent],~~ tetravalent atom across an oxygen of the cellulose hydroxyl group.

136. (Previously presented) The process of claim 135 wherein the acid catalyst is added to the wood cellulose after application of said solution to the wood cellulose.

137. (Previously presented) The process of claim 135 wherein the acid catalyst is added to the solution prior to application of the solution to the wood cellulose.

138. (Previously presented) The process of claim 132 wherein the acid catalyst is in the range of 0.05-10% of the solution.

139. (Previously presented) The process of claim 138 wherein the acid catalyst is in the range of 0.05-4.9% of the solution.

140. (Currently amended) The process of claim 132 wherein the acid catalyst ~~has a pKa of 4 or less~~ is a strong acid.

141. (Previously presented) The process of claim 140 wherein the acid catalyst has a pKa below 2.5.

142. (Previously presented) The process of claim 132 wherein the acid catalyst is in the range of .01-10% in situ the wood.

143. (Currently amended) The process of claim 132 wherein the ~~pro-catalyst~~ acid catalyst is a molecule comprised of silicone and a halogen.

144. (Currently amended) The process of claim 132 wherein the concentration of ~~non-~~

~~hydrophilic~~ organic solvents is in the range from 0-20%.

145. (Currently amended) The process of claim 144 wherein the percentage of ~~non-hydrophilic~~ organic solvents in a range of 0 to 10%.

146. (Currently amended) The process of claim 132 wherein the ~~hydrophilic~~ organic solvent is at a concentration of at least 10% of the solution.

147. (Currently amended) The process of claim 145 wherein ~~hydrophilic~~ organic solvents are at a concentration of 30%-99.9% of the solution.

148. (Currently amended) The process of claim 132 wherein the ~~organic~~ solution is less than 20% oligomers of the functional groups prior to applying the solution to the wood.

149. (Previously presented) The method of claim 132 wherein the organic solvent is an organic solvent with a (K_{ow}) less than 10.0.

150. (Previously presented) The method of claim 149 wherein the organic solvent is an organic solvent with a (K_{ow}) less than 1.0.

151. (Previously presented) The method of claim 150 wherein the organic solvent is an organic solvent with a (K_{ow}) less than 0.

152. (Previously presented) The process of claim 132 further comprising the step of:

adding at least one non-reactive additive to the wood cellulose that enhances a desired property selected from the group consisting of:

(1) fire resistance,

(2) insect resistance,

(3) moisture resistance,

(4) color,

(5) adhesion,

(6) insulation, and

(7) combinations thereof.

153. (Previously presented) The process of claim 152 wherein the step of adding at least one non-reactive additive further comprises adding the additive to the solution.

154. (Currently amended) The process of claim 152 wherein the step of adding the at least one non-reactive additive occurs before reacting the functional groups to bond with the wood cellulose.

155. (Currently amended) The process of claim 152~~5~~ wherein the additive is from the group consisting of:

1) diatimatious earth,

2) sodium silicates,

3) boron salts,

4) boric acid,

5) trimethy ~~(trialkyl)~~ borate,

6) Boron Halides ~~(BF3, BCl3, etc.)~~,

7) Boric Anhydride ~~(boron oxide)~~,

8) phosphorous compounds,

9) copper compounds,

10) metal alkoxide,

11) meta-phosphoric acid,

12) ~~a hydrophobic reagents~~ phosphoric acid,

13) ~~phosphoric acid~~ metaphoshoric acid,

14) ~~metaphoshoric acid~~ silicone salts, ~~and~~

15) ~~combinations thereof.~~ trialkyl borate,

16) boron oxide, and

17) combinations thereof.

156. (Previously presented) The process according to claim 132, wherein the wood cellulose has an original weight and wherein the duration of treatment attains a weight of compound which is covalently bonded to the wood cellulose having a range of 0.1 to 10 weight percent of the original weight of the wood cellulose.